

## A comparison of the effects of Saperavi flavonoids, Quercetin and NOS-blockers on kainite rat-model of epilepsy

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Epilepsy is characterized by the occurrence of repetitive seizures and can greatly affect a patient's cognition, particularly in terms of learning and memory[1]. The development of epileptogenesis is associated with a diversity of plastic changes which functionally affect different system levels. In the studies of the determination of new approaches of epilepsy treatment plant flavonoids are very important, because of their abilities to scavenge reactive oxide species and to inhibit pathological NO -the number of which is increased during epilepsy[2]. In our previous experiments antioxidant/anti- amnesic potency of the active fraction of flavonoids from Saperavi (SF) was revealed: SF effectively prevented age-related increase of quantity of malondialdehyde in the brain of adult rats. It has been shown that in kainite-induced rat model of epilepsy (KA-SE) SF corrects epilepsy-associated behavioral and memory disturbance. The aim of the present work was to investigate the fine mechanism of action of SF. The task of the research was to evaluate the effects of supplementation of rats during the early stages of epileptogenesis with SF on KA-SE-induced behavioral and morphological changes and to transmit data to the effects of antioxidant quercetin and NO synthase blocker - L-NAME.

Experiments were conducted on white laboratory rats for 8-10 weeks. Intraperitoneal kainic acid injections (15 mg/kg) was performed for induction of KA-SE. KA-SE-induced changes were monitored in behavioral and morphologic experiments. The effects of 8-days administration of SF (25mg/kg), quercetin (25 mg/kg) and L-NAME (40 mg/kg) on kainite-induced disorders were defined and comparison analyses were performed. The program Prizma was used for Statistical analyses.

Our experiments revealed that behavioral alterations induced by KA-SE are abolished by administration of SF. The frequency and duration of behavioral seizures in KA-SE rats statistically decreased and correction in learning/memory ability were detected. The efficiency of quercetin on epilepsy induced cognitive impairment compare to the SF was less pronounced. L-NAME effectively blocked the KA-SE-induced seizure frequency and duration, but exacerbate memory deficit induced by epilepsy. The data of morphological experiments (KA+SF) and (KA+L-NAME) were found to be correlated with behavioral experiments: the loss of neurons due to the reduction of convulsions, was not revealed. Quercetin improved the test of learning, however, due to poor bioavailability, was not effective against KA-SE-induced destruction of hippocampus.

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### Reference:

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